

## **FINANCING HEALTH RESEARCH: NEW TRENDS AND MODALITIES**

**Andres de Francisco**

*Global Forum for Health Research, Geneva, Switzerland.*

**Keywords:** Health research, financing modalities, trends, public private interactions, neglected diseases, United Nations Millennium Development Goals, innovative developing countries, scientific production.

### **Contents**

1. Introduction
  2. Trends in health research financing
    - 2.1. Total funding and trends
    - 2.2. Public sector funding
    - 2.3. Private sector funding at the Global level
    - 2.4. Private not-for-profit
    - 2.5. Low- and middle-income countries
    - 2.6. Innovative developing countries
  3. Financing for research on neglected diseases
    - 3.1. Investments in malaria research
    - 3.2. Investments in HIV-AIDS research
      - 3.2.1. HIV vaccine research
      - 3.2.2. HIV Microbicide research
    - 3.3. Comparisons of disease burden and research funding
  4. Public-private interactions: new modalities for financing neglected disease research
    - 4.1. Progress and concerns
  5. Scientific production and financing
  6. Challenges for future financing of health research
- Glossary  
Bibliography  
Biographical Sketch

### **Summary**

Health is an essential element required to achieve the UN Millennium Development Goals by 2015. Innovation and research, both in their basic and their more applied form, are critical components of health planning and programme and programme development.

Financing for health research has increased steadily for the past fifteen years and it is now well over US\$105 billion worldwide by private and public sectors combined. Yet, research on a series of diseases and conditions which account for a large proportion of ill-health in developing countries is neglected, largely due to a market failure as a result of non profitability and low economic returns of products emerging from research. Market failures, combined with deficiencies in the provision of health services, have left potentially high impact interventions to address health problems in developing countries out of the innovation cycle.

Much of this trend has been reversed in recent years, and new modalities of funding, of priority setting, and of interactions between the private and public sectors have emerged. The 1990s saw an unprecedented emergence of private-public interactions for health working aiming at addressing research for neglected diseases. The current challenge is to ensure the sustainability of these projects as they move towards expensive phases of product research and development. Achievements in the field of health research have not been reached without difficulties. The impartiality of the private sector's investments in clinical research has been questioned in certain cases, thereby raising concerns on their value to define country and global clinical guidelines.

The purpose of this chapter is to review current status and some of the new trends in funding for health research and to consider their likely impact on diseases. It discusses issues of public-private interactions, the relation of health research financing to disease burden, and describes some challenges ahead. Given that there is no coordination on funding for health research at the global level, interactions between the players working in health research has become very relevant.

## **1. Introduction**

Health research for development is essential for the design and implementation of programmes to improve health. In September 2000, 189 nations adopted the United Nations Millennium Declaration, an ambitious document affirming the right of every human being to development and to measure progress using eight development goals. The commitment is to reach the Millennium Development Goals by 2015. Health, and therefore health research, has a key role to play in this commitment.

It has become widely accepted that better health is a necessary element of development and that investments in health have become essential to economic growth policies that seek to improve the lot of poor people. This growing understanding, that improvement in health is not only an outcome but also a co-determinant of development, has been reflected in evolving development paradigms over several decades, from the concept of human resource/capacity/capital development which linked factors such as education and health with economic progress to the Comprehensive Development Framework and Poverty Reduction Strategy approaches of recent times which place health within holistic, multi-sectoral settings.

Funding health research shows the emphasis placed on specific areas of health. The past ten years have seen unprecedented advances in health research. Funding has been equally dynamic, with new players bringing new funds, such as the Bill & Melinda Gates Foundation, and with established funders interacting in innovative ways, like the public-private partnerships interactions.

There is no coordination on funding for health research at the global level. Health research funds from the public and private sectors, and between different countries, are allocated according to different prioritization processes. To date there has been little analysis on health research funding modalities and little communication between the various funding sources and performers.

While the goal of funding health research is the same for the private and the public sectors, it seems that specific objectives may differ between these two sectors. The public sector works to improve policies towards social goals; the private sector needs to answer to their constituencies and boards, which in itself creates the business model that produces profits. Nevertheless, as stated, the goals are the same; both sectors are needed to contribute towards the improvement of health. This is why the relation between the public and private sectors has become so relevant in the international health research scene since the 1990s.

The Commission on Health Research for Development had recommended that countries invest 2% of their health budgets on health research and that ODA funded projects would invest 5% on research and capacity development. There are no systems in place in any country in the world which measures financial flows for health research in a systematic way. The little information available is based on specific studies undertaken using estimates and projections. Perhaps this is the reason for which there has been little progress in the past to divert funds for health research into diseases and conditions which account for the highest mortality, morbidity and disease burden in the world.

In December 2001 the Commission on Macroeconomics and Health, presented the need to invest in health to the Director General of the World Health Organization, emphasising the high rates of return in investment in health. The report talked about the need to increase ODA for health and for the supply of global public goods. The Commission recommended an 80% increase in the health budget of low and middle income countries (LMICs) between 2001 and 2015, and a seven-fold increase in donor assistance to these countries for health over the same period. They recommended increasing total grant assistance by 2007 to US\$27 billion, which would assist LMICs to scale up interventions, invest in health research and development for disease of the poor, and increase delivery of global public goods by international institutions. The Commission went on to propose a Global Health Research Fund which would disburse US\$1.5 billion a year. It seems that the international donor community was not ready to institute a global health research fund and this has not occurred to date.

The purpose of this chapter is to review current status and some of the new trends in funding for health research and to consider their likely impact on diseases. It will review the current status of funding of research on specific diseases, including Malaria and HIV-AIDS. Further, we will describe the so called 'Innovative Developing Countries', which have emerged as an important source of funding and ideas to produce medicines, diagnostic tools and vaccines for diseases prevalent largely in low and middle income countries. It will review new interactions between the public and the private sector to provide tools for neglected diseases, and will discuss some of the issues related to the independence of academic research results related to sources of funding. The document will then close with some thoughts on the challenges ahead.

## **2. Trends in health research financing**

In 1990, the report of the Commission on Health Research for Development 'Health Research: Essential Link to Equity in Development' drew world attention to the divide between the level of funding and the magnitude of disease burden. The Commission

reported on a study which showed US\$30 billion was spent worldwide on health research in 1986. It also referred to the fact that 'about 5% of resources for health research were spent on 90% of the world's health problems'. These figures led to the term the '10/90 gap' in health research financing.

The 1996 Report of the WHO Ad Hoc Committee on Health Research Relating to Future Intervention Options, 'Investing in Health Research' reiterated the importance of establishing an institutional mechanism for the systematic tracking of investments in health research and development. The study identified public and private investments in health research and estimated global health research investments for the first time at US\$56 billion. The authors acknowledged the complexity of developing a useful system to monitor resource flows.

Since the 1990s a number of institutions have undertaken activities to document health resource flows in specific areas. For example, the Wellcome Trust supported a study to document resource flows for malaria and the Netherlands Inter-disciplinary Demographic Institute (NIDI), in collaboration with United Nations Population Fund (UNFPA) and the Joint Programme on HIV-AIDS (UNAIDS), developed a database for population and HIV-AIDS. Experts from OECD countries have been working to improve the coverage, quality and comparability of data on health research and development that can be compiled from R&D surveys and budgets. The United Nations Educational, Scientific and Cultural Organization (UNESCO) is preparing to improve the availability of health-related aggregates through revision of its S&T data collection system. In addition, the World Health Organization (WHO) is promoting the establishment of national health accounts and enhanced disease surveillance in low and middle income countries. Studies undertaken by the Global Forum for Health Research and its partners show the trends of health research funding. Their figures include aggregated funding at the global level from both the public and the private sectors.

### 2.1. Total funding and trends

In 2001, an estimated US\$105.9 billion was spent globally on health research and development. This figure contrasted with the US\$73.5 billion invested in 1998.

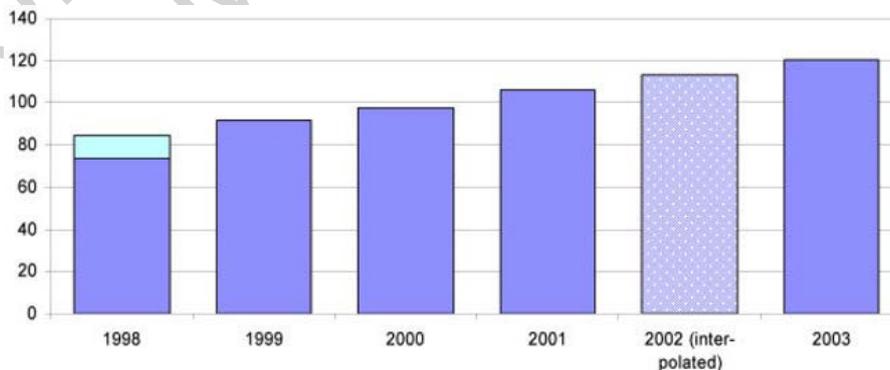


Figure 1. Estimates for total health R&D expenditure (US\$ billion) based on OECD data.

Of interest to note in the graph is that there has been an increasing pace in the increases from study to study. The figures for the year 2001 represent 3.5% of the total estimated national health expenditure worldwide. This figure is up from the 2.6% in 1998. It needs to be noted that there has been a 'real' increase in the total well above inflation. The report indicates that the increases can be ascribed as follows:

- More complete data for 1998 and adjustments in estimation methodology account for US\$11.43 billion of the increase. Most of the adjustment was in the private-for-profit sector (US\$10.07 billion). There was also an increase of US\$1.48 billion in the public sector and a decrease of US\$ 0.13 billion for the private not-for-profit sector.
- Real increases (not adjusted for inflation and currency fluctuations) in expenditures in the private not-for-profit sector of US\$10.66 billion.
- Real increases (unadjusted) in public sector expenditures of US\$8.14 billion.
- Real increases (unadjusted) in private not-for-profit sector expenditures of US\$2.19 billion.

This leads to the conclusion that there are higher investments in health research both in the public as well as in the private sector as a whole. Public expenditures were an estimated US\$46.6 billion (44%), of which US\$44.1 billion came from developed countries and US\$2.5 billion from developing countries (low and middle income). The private sector accounted for an additional US\$59.3 billion, of which for-profit companies accounted for US\$51.2 billion (48.3%) and not-for-profit organizations for US\$8.1 billion (7.6%).

Global investments in health R&D are heavily dominated by just a few countries—not unexpectedly given their long-standing economic strength. The USA alone accounts for over 50% of global expenditures, followed by Japan, United Kingdom, Germany, and France.

Country	Global distribution of public and private health R&D
United States	<b>51.1%</b>
Japan	<b>10.2%</b>
United Kingdom	<b>7.5%</b>
Germany	<b>6.5%</b>
France	<b>5.3%</b>
Canada	<b>3.4%</b>
Italy	<b>2.6%</b>
Sweden	<b>1.8%</b>
Spain	<b>1.4%</b>
Switzerland	<b>1.4%</b>
Australia	<b>1.3%</b>
Belgium	<b>1.2%</b>
Netherlands	<b>1.2%</b>
Denmark	<b>0.8%</b>

Others	4.4%
--------	------

Table 1. Global distribution of public and private health R&D expenditures, 2001.

### Funding sources:

Funding for health research in any country typically comes from four types of sources:

- private for-profit sector;
- public sector;
- private not-for-profit sector, and
- various public and private non-domestic sources.

The private for-profit sector is the largest investor globally, accounting for 49% of funds for health research in high-income countries and 36% in low- and middle-income countries. Private companies based in high-income countries usually invest in their home country, but, as in the case of pharmaceutical companies, they also invest in both other high-income countries and to a lesser extent in low- and middle-income countries.

Governments are the next-largest funders, accounting for 43% of overall funds in high-income countries and 42% in low- and middle-income countries. Governments support health research through their allocations to ODA, higher education, science and technology, R&D, trade, public health and medicine.

The private not-for-profit sector includes private universities, foundations and charities. It pulls roughly the same funding weight in high-income countries (7.5%) and low- and middle-income countries (9.5%). In the latter, non-domestic sources include ODA accounting for 9% of total funds, and research institutes in high-income countries contributing 2%.

-  
-  
-

TO ACCESS ALL THE 28 PAGES OF THIS CHAPTER,  
Visit: <http://www.eolss.net/Eolss-sampleAllChapter.aspx>

### Bibliography

Ad-Hoc Committee on Health Research (1996). *Investing in Health Research and Development*. World Health Organization, Geneva [A comprehensive study on the potential of investing in health research for development].

Anderson, J., MacLean, M., and Davies, C. (1996). *Malaria Research: An Audit of International Activity*. The Wellcome Trust: London.

Burke MA, de Francisco A, eds (2004). Global Forum for Health Research, Monitoring Financial Flows for Health Research, 2004. Global Forum for Health Research, Geneva. [A comprehensive study with extensive information on the global and country financial flows for health research from which graphs and statistics are extracted]

Burke MA, de Francisco A, eds (2005). Monitoring Financial Flows for Health Research 2005: Behind the Global Numbers, 2005. Global Forum for Health Research, Geneva. [A series of comprehensive studies with information on disease research funding from which graphs and statistics are extracted]

Commission on Health Research for Development, Health Research, Essential Link to Equity in Development, 1990 [A pioneering publication which raised for the first time the global requirement to pay attention and invest in health research for countries in the developing phase].

Delaney B (2006). Is society losing control of the medical research agenda? *British Medical Journal* **332**: 1063-1064.

DiMasi JA, Hansen RW, Grabowski HG (2003). The price of innovation: new estimates of drug development costs. *Journal of Health Economics*, **22**: 151-185.

Global Forum for Health Research, Monitoring Financial Flows for Health Research, 2001, Global Forum for Health Research, Geneva.

Global Forum for Health Research. *The 10/90 Report on Health Research, 2003-2004*. Geneva, 2004. [A detailed report on the global imbalance of health research funding and disease burden].

Lamourelle G., Harrison P., Rowley J., Warren M., for the HIV Vaccines and Microbicides Resource Tracking Working Group (2005). Reported in: Burke, MA, de Francisco A, eds: Monitoring Financial flows for Health Research: Behind the numbers, 2005, Global Forum for Health Research, Geneva. 2005. [A series of comprehensive studies with information on disease research funding from which graphs and statistics are extracted].

Lewis G, Lipworth S, de Francisco A (2002). Input indicators from output measures: a bibliometric approach to the estimation of malaria research funding. *Research Evaluation*, **11** (3):155-163.

Lexchin J., Bero Lam Djulbegovic B., Clark O. (2003). Pharmaceutical industry sponsorship and research outcome and quality: systematic Review. *British Medical Journal*: 326:1167-79.

Moran M (2005). The new landscape of neglected disease drug Research and Development. *London School of Economics and Political Science and the Wellcome Trust*. London [an important evaluation of the future of public-private interactions for health research funding from which data and statistics are extracted].

Morel C.M. *et al* (2005). Health Innovation networks to help developing countries address neglected diseases, *Science*, **309**: 401-404, 15 July. [An innovative paper exploring the potential of LMIC funding, producing and using scientific work from which a graph is extracted]

National Institute for Health and Clinical Excellence, NICE (2004).The management of dyspepsia in adult patients in primary care, London UK.

New York Times, 28 June 2006, by Reed Abelson.

Office of Budget, National Institutes of Health, US (NIH): <http://officeofbudget.od.nih.gov/FY07/Performance.pdf>, accessed on 28 July 2006. [An account of NIH funding accessed in the internet]

Patsopolous NA, Analatos A, Ioannidis JPA (2006) Origin and funding of the most frequently cited papers in medicine: database analysis. *British Medical Journal* **332**:1061-3.

Pecoul B, Chirac C, Trouiller P, Pinel J (1999). Access to essential drugs in poor countries: a lost battle? *Journal of the American Medical Association* **281**: 361-67.

PRISM Report no. 7. Malaria Research, an audit of international activity, Wellcome Trust, London, September 1996.

Program for Appropriate Technology in Health (PATH) (2005).Malaria research and development: an

assessment of global investment, Malaria R&D Alliance, November.

World Health Organization, *Macroeconomics and Health: Investing in Health for Economic Development*, Report of the Commission on Macroeconomics and Health, December 2001. Geneva.

World Health Organization. The World Health Report, 2004. Geneva 2004.

### **Biographical Sketch**

**Andres de Francisco** is a Medical Doctor from Colombia with a PhD from the University of London and two Masters Degrees on Public Health and Tropical Medicine. He has worked extensively in the design, implementation, and evaluation of health interventions in developing countries, and in the subsequent transfer of knowledge into policies for health and population programmes in South America (Amazonas, Colombia), Africa (UK Medical Research Council in The Gambia), and Asia (Matlab Maternal and Child Health and Family Planning Programme and Coordinator of the Reproductive Health Research at ICDDR,B, the Centre for Health and Population Research in Bangladesh).

His training includes an MD in Bogota, Colombia (Rosario, 1983), PhD in Medicine (London 1994), Masters in Community Health in Developing Countries (1987) and in Masters in Clinical Tropical Medicine (1986) in London, and a Diploma on Tropical Medicine (Royal Colleague of Physicians of London in 1986).

He is currently Deputy Executive Director and Head of Research and Programmes Unit of the Global Forum for Health Research, an international foundation registered in Switzerland and hosted by the World Health Organization. He has also been Elected Member of the National Academy of Medicine of Colombia, Associate of the Department of International Health at the Johns Hopkins University, Honorary Lecturer at the London School of Hygiene and Tropical Medicine, and a Fellow of the Royal Society of Tropical Medicine and Hygiene in London. Member of the Editorial Board of 'Health Research Policy and Systems' and member of the reviewing panel of the Teasdale-Corti 2006 team grants of the Global Health Research Initiative in Canada. He has published over 80 scientific publications and policy briefings.